REMARKS

Claims 1-5, 10-12, 15-32, 34,37, 38,40-42, 45-51 and 53-62 are now pending. Claims 5, 10-12, 15, 16, 21-25, 27-31, 34, 36, 48-50 and 53-62 stand rejected. Claims 1-5, 10-12, 15-32, 34, 37, 38, 40-42, 45-51 and 53-62 are subject to restriction and/or election. Applicants have previously cancelled the claims of Group II, namely, independent claim 3 and claims dependent thereon. Applicants now withdraw the claims of Group I, namely claims 1, 2, 17-20 and 32, but expressly reserve the right to seek rejoinder of these claims in the instant application if one or more claims linking independent claim 1 to independent claims 4, 5 or 37 is found to be allowable. Reconsideration of the rejection is respectfully requested in view of these amendments and the following remarks.

Election/Restriction

In the previous response, Applicants cancelled the invention of Group II, traversed the restriction of Groups III- V, but provisionally elected to prosecute the invention of Group IV. The Office agreed that invention Groups III and V could be classified in the same Group as IV. Applicants now withdraw the invention of Group I, namely claims 1 and 32, from consideration as being directed to a non-elected invention.

The Request for Information

The Action required Applicant and the assignee to provide the following information under 37 CFR 1.105 that the examiner has determined is reasonably necessary to the examination of the application: specifically, to complete the background description in the disclosure by documenting the state of the art of SiC matrices. Specifically, the Action requested the title, citation and copy of each publication that any of the applicants relied upon to develop the disclosed subject matter that describes the applicant's invention, along with a concise explanation of the reliance placed on that publication in the development of the disclosed subject matter.

In reply to the Request for Information, please note that none of the documents identified below *actually* came to applicants' attention prior to filing the instant application, and therefore applicants *in fact* placed no reliance in them in their development of the instant invention. However, each cited document appears to be available as prior art against the instant application, and so each *could* have been used in the development of the instant invention. Each is relevant on the subject of making a SiC matrix in fiber-reinforced SiC composites produced by silicon infiltration, and therefore each is discussed in detail below.

U.S. Patent No. 6,221,475 to Domergue et al. (published as PCT Publication WO98/16484 on April 23, 1998) discloses a friction element suitable for braking applications made from a carbon fiber reinforced composite material whose matrix component contains carbon and silicon carbide. At least in the vicinity of the friction surfaces, the matrix of the composite features a pyrolytic carbon phase formed by chemical vapor infiltration (CVI) of carbon in the vicinity of the carbon fibers, a second phase that is refractory and which is obtained at least in part from a liquid precursor and pyrolysis, and a phase of silicon carbide. The "refractory phase" is understood to mean a phase of carbon or ceramic. At least in the vicinity of the friction surfaces, the composite material is constituted, by volume, from 15% to 35% of carbon fibers, from 10% to 55% of the first matrix containing the pyrolytic carbon obtained by CVI, 2% to 30% of the second matrix phase of refractory material coming at least in part from the liquid precursor, and from 10% to 30% of the silicon carbide phase.

U.S. Patent No. 6,030,913 to Heine et al., issued on February 29, 2000, discloses silicon carbide articles reinforced with short graphite fibers, and their production. The goal is to produce a material that still retains high strength at high temperatures.

The process begins with high strength graphite fibers, which may be provided in a number of forms. The graphite fibers are first coated with carbon. This is done by infiltrating a carbonaceous resin into the graphite fibers, typically by conventional prepreg techniques. The resin preferably has a high char yield. The impregnated or coated fibers are placed into a compression mold, pressed together to expel air, and then the resin is cured, and then further heated to carbonize. The fired or carbonized article is then re-coated or re-infiltrated with a carbonizable agent, and re-fired. The article, which has now been re-impregnated and refired one or more times, is now graphitized by heating to very high temperatures, on the order of 1800-2400C. After graphitization, the article is comminuted such as in a chopping mill to produce short segments of fibers, about 1 mm in length. The resulting "fibrous dry material" is then mixed with a carbonaceous binder so that it can be compression molded to the desired shape. The molded body is then cured and carbonized, and optionally further graphitized. The body is then siliconized with molten silicon in the temperature range of 1450 to about 2200C. The final composite body features graphite fibers enclosed in a shell of graphitized carbon embedded in a matrix predominantly consisting of SiC and furthermore additionally containing up to 20 wt% of free silicon and minute quantities of unreacted carbon

U.S. Patent No. 6,079,525 to Gerd Dietrich et al., issued on June 27, 2000, is directed to a brake unit, comprising a brake disc and brake lining each made from fiber-reinforced C/SiC composite material made by silicon infiltration of a C/C "prebody" (a preform), wherein the brake lining (i.e., brake pad) tribologically interacts with the brake disc, and wherein the lining preform has a higher density of carbon, at least near the friction surface, than the disc preform. The carbon/carbon preform is produced by infiltrating a preform containing isotropic carbon fibers with a carbon source such as carbonaceous resin, optionally containing carbon particles, and pyrolyzing the resin to form solid carbon. The greater the porosity of the C/C preform, the more reaction takes place, and thus the more SiC is produced. Thus, the C/C brake disc is

produced with more porosity than the C/C brake pad, so upon silicon infiltration, it contains more SiC than does the brake pad, and is therefore harder, and therefore causes most of the tribological wear during service to take place in the brake pad. Dietrich states that the open pore and capillary volume of the C/C preform should be at most about 60%, and preferably about 40-50 vol%. The micrograph of the brake disc of Figure 1 shows a final composition after ceramizing of about 35-45 vol% carbon fibers, about 40-50 vol% SiC and maximally about 15 vol% silicon. The density is about 2.25 g/cc.

A copy of each listed document is attached in the Appendix.

The Prior Art Rejections

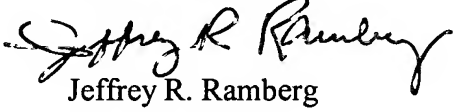
The claims of Groups Ill-V were rejected under 35 U.S.C. §102(b) as being anticipated, or, in the alternative, under 35 U.S.C. §103 as being obvious over U.S. Patent No. 6,079,525 to Dietrich et al. (hereinafter referred to as "Dietrich"). Applicants respectfully traverse this rejection.

Applicants respectfully submit that Dietrich neither discloses nor suggests the claimed invention. In particular, independent claims 2,3,4 and 5 each requires at least about 20 percent by volume ofsilic9n; and claim 37 calls for at least about 50 volume percent. In contrast, the composite body of Dietrich contains at most about 15% by volume silicon. Relatively large fractions of silicon are an important feature of the present invention because they help to achieve low thermal expansion coefficient, often an objective of the instant invention. Thus, applicants respectfully submit that the claimed invention is patentable over Dietrich, and that the rejection accordingly should be withdrawn.

Applicants respectfully submit that the present application meets the requirements for patentability. Accordingly, applicants respectfully request a Notice of Allowance directed to claims 4-5, 10-12, 15, 16, 21-25, 27-31, 34, 36-38, 40-42, 45-51 and 53-62.

Should the Examiner deem that any further action on the part of applicants would be desirable, the Examiner is invited to telephone applicants' undersigned representative.

Respectfully submitted,



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Appendix: One copy of each document discussed in reply to the Request for Information